

REMARKS

The Examiner is thanked for the performance of a thorough search and for allowing Claims 1-5 and 19-23.

Claims 8, 19, 25, and 26 have been amended. No claims have been added or canceled. Hence, Claims 1-5, 7-9, 13-23, 25-27, and 31-40 are pending in the application.

I. STATUS OF CLAIMS AND SUMMARY OF THE OBJECTIONS/REJECTIONS

Claims 1-5 and 19-23 have been allowed.

Claims 13 and 38 are objected to as being dependent on a rejected base claim but would be allowable if rewritten in independent form including all of the features of the base claim and any intervening claims.

Claims 25-27, 31-36, and 39-40 are rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter.

Claims 7, 9, 14, 17-18, 25, 27, 32, and 35-36 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Iba et al., U.S. Patent No. 5,835,766 (“IBA”) in view of Doshi et al., U.S. Patent No. 6,021,113 (“DOSHI”).

Claims 8, 26, 37, and 39 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of Sweeny, U.S. Patent No. 4,965,716 (“SWEENEY”).

Claims 15-16 and 33-34 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of SWEENEY, and further in view of Porter et al., U.S. Patent No. 6,332,023 (“PORTER”).

Claims 31 and 40 are indicated as including allowable subject matter and would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 101 and to include all of the features of the base claim and any intervening claims.

II. REJECTIONS UNDER 35 U.S.C § 101

The Office Action has rejected Claims 25-27, 31-36, and 39-40 under 35 U.S.C. § 101 as allegedly directed to non-tangible embodiments of a computer-readable medium. This is incorrect.

35 U.S.C. § 101 indicates that a manufacture is patentable subject matter. Applicants respectfully submit that any type or kind of computer-readable medium is necessarily an article of manufacture. The Office Action asserts that there exist some embodiments of a computer-readable medium that are not tangible because they are incapable of being touched or perceived (presumably, by a human being). Human perception notwithstanding, it is noted that any computer-readable medium, by its very nature, is tangible because if a computer can read from a computer-readable medium, it necessarily follows that a computer is capable of perceiving the computer-readable medium. If a computer could not perceive the computer-readable medium, then by definition the computer-readable medium would not really be a computer-readable medium. Consequently, a computer-readable medium, in and of itself, is both (a) tangible, as it is capable of being perceived by a computer, and (b) patentable under 35 U.S.C. § 101, as a computer-readable medium qualifies as an article of manufacture.

Notwithstanding the question of how a computer can read from a medium that is incapable of being perceived, Applicants have amended each of Claims 25 and 26 to clarify that each claim is drawn to a computer-readable storage medium. Consequently, it is respectfully submitted that independent Claims 25 and 26, and their dependant claims, are all directed to tangible articles of manufacture. Therefore, Claims 25-27, 31-36, and 39-40 are directed to statutory subject matter.

Reconsideration and withdrawal of the rejection of Claims 25-27, 31-36, and 39-40 under 35 U.S.C. § 101 is respectfully requested.

III. REJECTIONS BASED ON THE CITED ART

A. Independent Claim 7

Claim 7 has been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of DOSHI. The rejection is respectfully traversed.

Claim 7 comprises the feature of:

wherein the step of filtering further includes removing from said plurality of candidates any candidates that have a CAN-BE-VICTIM flag that indicates the candidate cannot be a victim.

Thus, in Claim 7 one of the factors taken into account in whether to consider selecting a candidate as a victim for resolving a deadlock is a CAN-BE-VICTIM flag that indicates whether or not the candidate can be considered in the selection of a deadlock victim. This feature of Claim 7 is not shown or in any way suggested by IBA or DOSHI.

The Office Action asserts that the use of a “demand status”, as described in col. 19, lines 21-36 of DOSHI is equivalent to the above feature of Claim 7. This is incorrect. Contrary to the above feature of Claim 7, in DOSHI a “demand status” is NOT used in the process of selecting a victim (from a predetermined plurality of victim candidates) to resolve a deadlock; rather, DOSHI uses a “demand status” to resolve contention for transmitting capacity among signals that need to be transmitted between nodes in an optical network. (See col. 6, lines 15-39; col. 19, line 9-36.)

Specifically, in DOSHI a “demand” is a request (or a need) to transmit a signal from one node in the optical network to another node. (See, for example, col. 11, lines 44-46 and col. 14, lines 64-66.) Further, DOSHI expressly teaches that contention for transmission capacity is DIFFERENT than a deadlock. Thus, DOSHI cannot possibly teach or suggest the use of a “demand status” to select a deadlock victim from a predetermined plurality of demands simply because a “demand status” associated with a “demand” has nothing to do with a deadlock.

For example, in col. 11, line 65 to col. 12, line 1, DOSHI states that “[c]ontention locking ensures that two contending demands performing path search operations at the same time will not create a deadlock.” This passage not only shows that contention is something completely different than a deadlock, but it also clearly shows that in DOSHI contention locking is actually used to AVOID deadlocks. Further, DOSHI teaches multiple ways to avoid deadlocks between “demands” that contend for capacity over the paths in the optical network.

For example, in col. 19, lines 12-33, DOSHI states that:

The possibility that simultaneous search for routes by many demands may lead to deadlocks can be handled using one of the following two approaches.

A first approach allows asynchronous searches to resolve contention and relies on the fact that there is sufficient randomness in the start times of the various source nodes such that **deadlocks are not created**. A second possible approach allows parallel searches only among demands that do not interfere with one another, and creates a sequence of Phase 2 searches so that within a search group, **there is no possibility of a deadlock**. (Emphasis added.)

The above passage clearly shows that by resolving contention among demands DOSHI provides for avoiding any deadlocks among “demands”. Thus, in DOSHI there is no need to resolve deadlocks because deadlocks are prevented from occurring in the first place.

In sum, in DOSHI a “demand status” is used to resolve contentions for capacity between demands, and the contention between demands is different than a deadlock. Thus, the “demand status” in DOSHI cannot possibly be used in resolving a deadlock. In contrast, Claim 7 features the use of a CAN-BE-VICTIM flag in the process of selecting a victim (from a predetermined plurality of victim candidates) to resolve a deadlock.

In addition, the use of the “demand status” described in DOSHI is fundamentally different than the use of the CAN-BE-VICTIM flag featured in Claim 7. The “demand status” of value “2”, as described in col. 19, lines 34-36 of DOSHI, is used to remove a “demand” from being a candidate to receive capacity; thus, the “demand status” of value “2” is effectively used

to ensure that a “demand” will not receive capacity and will not be transmitted or processed. In contrast, a CAN-BE-VICTIM flag indicating that a candidate cannot be a victim, as recited in Claim 7, is used to prevent a participant in a deadlock from being selected for termination as a deadlock victim to resolve the deadlock; thus, the CAN-BE-VICTIM flag is used to ensure that a participant in a deadlock will continue to execute.

For the reasons given above, IBA and DOSHI, when taken alone or in combination, do not teach all of the features recited in Claim 7. Thus, Claim 7 is patentable under 35 U.S.C. § 103(a) over IBA in view of DOSHI. Reconsideration and withdrawal of the rejection of Claim 7 under 35 U.S.C. § 103(a) is respectfully requested.

B. Independent Claim 8

Claim 8 has been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of SWEENEY. The rejection is respectfully traversed.

Claim 8 comprises the features of:

initially establishing a plurality of candidates involved in said deadlock as candidates to be said victim, **wherein the plurality of candidates are a plurality of possessory entities involved in said deadlock;**

...
wherein the step of filtering further includes removing from said plurality of candidates the **candidates holding at least one resource whose resource priority is higher than the resource priority of at least one resource held by at least one of the other candidates.**

Thus, in Claim 8 one of the factors taken into account in whether to consider selecting a candidate as a victim for resolving a deadlock is the resource priority of a resource that is held by a candidate, which candidate is a possessory entity. It is respectfully submitted that this feature of Claim 8 is not shown or in any way suggested by IBA or SWEENEY.

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The Office Action asserts that SWEENEY describes the use of a priority of a resource to eliminate a possessory entity from being considered for a deadlock victim. This is not correct.

Nothing in SWEENEY describes or suggests that resources have priorities, much less that the priority of a resource, which is held by a possessory entity involved in a deadlock, is in any way relevant to eliminating the possessory entity from being considered for selection as a deadlock victim. The priorities discussed in SWEENEY are priorities of communication sessions and not the priorities of the resources that may be accessed or held by these sessions. For example, in col. 3, lines 31-37, SWEENEY states:

Each communications session to be managed in a network interface unit 5 will have an associated priority value assigned to it which denotes the inherent relative importance of that communication session with respect to other communication sessions which are to be managed by that particular node 3 and by other nodes 3' in the system. (Emphasis added.)

The above passage makes it very clear that the priority values are associated with communication sessions, which in the context of Claim 8 would be considered possessory entities and not resources.

Further, absolutely nothing in SWEENEY teaches or describes deadlocks. While SWEENEY may be describing communication sessions that are assigned priority values, SWEENEY does not describe or suggest that communications sessions may be involved in a deadlock. Rather, SWEENEY uses priority values associated with communication sessions to determine which communication session will be allowed to transmit its data onto the network. (Col. 4, lines 11-17.) In other words, SWEENEY uses priority values associated with communication sessions for contention resolution and NOT for resolving deadlocks.

For the reasons given above, IBA and SWEENEY, whether taken alone or in combination, do not teach all of the features of Claim 8. Thus, Claim 8 is patentable under 35

U.S.C. § 103(a) over IBA in view of SWEENEY. Reconsideration and withdrawal of the rejection of Claim 8 under 35 U.S.C. § 103(a) is respectfully requested.

C. Independent Claims 25 and 26

Independent Claims 25 and 26 include features similar to the features of Claims 7 and 8 discussed above. For this reason, the Applicants respectfully submit that Claims 25 and 26 are patentable under 35 U.S.C. § 103(a) for at least the reasons given above with respect to Claims 7 and 8. Reconsideration and withdrawal of the rejections of Claims 25 and 26 under 35 U.S.C. § 103(a) are respectfully requested.

D. Dependent Claims 9, 13-18, 27, and 31-40

Claims 9, 14, 17-18, 27, 32, and 35-36 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of DOSHI. Claims 37 and 39 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of SWEENEY. Claims 15-16 and 33-34 have been rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over IBA in view of SWEENEY, and further in view of PORTER.

Each of Claims 9, 13-18, 27, and 31-40 is dependent upon one of independent Claims 7, 8, 25, or 26, and thus includes each and every feature of its corresponding independent claim. Furthermore, in rejecting Claims 15-16 and 33-34 the Office Action relies explicitly on IBA and SWEENEY, but not on PORTER, to show the features discussed above with respect to Claims 7, 8, 25, and 26. Because IBA and SWEENEY do not teach the subject matter of Claims 7, 8, 25, and 26, any combination of these references with PORTER necessarily fails to teach the complete combination recited in any dependent claim of Claims 7, 8, 25, and 26. Thus, each of Claims 9, 13-18, 27, and 31-40 is allowable for the reasons given above for Claims 7, 8, 25, and 26.

In addition, each of Claims 9, 13-18, 27, and 31-40 introduces one or more additional features that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those features is not included at this time. Therefore, it is respectfully submitted that Claims 9, 13-18, 27, and 31-40 are allowable for at least the reasons given above with respect to Claims 7, 8, 25, and 26.

IV. CONCLUSION

The Applicants believe that all issues raised in the Office Action have been addressed. Further, for the reasons set forth above, the Applicants respectfully submit that allowance of the pending claims is appropriate. Reconsideration of the present application is respectfully requested in light of the amendments and remarks herein.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, a law firms check for the petition for extension of time fee is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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